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10/573,622	03/28/2006	Fumito Nishida	DC5182 PCT1	5533

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EXAMINER	
ABRAHAM, AMJAD A	

ART UNIT	PAPER NUMBER
1791	

NOTIFICATION DATE	DELIVERY MODE
11/16/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patents.admin@dowcorning.com

Office Action Summary	Application No.	Applicant(s)	
	10/573,622	NISHIDA ET AL.	
	Examiner	Art Unit	
	AMJAD ABRAHAM	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 September 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's remarks and amendments, filed on September 9, 2009 have been carefully considered. Claims 1-9 are currently pending as no new claims have been added.

The Terminal disclaimer has not been approved, since it has the wrong filing date for the instant case and the attorney is not of record.

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 1-5 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-2, 6, and 13-16 of copending

Application No. 10/573,623. Although the conflicting claims are not identical, they are not patentably distinct from each other because both applications claim a method for metallizing a silicone rubber substrate, specifically, using a radiation curable rubber and a gold metal substrate. See table below.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Instant Application	10/573,623
1. A method of preparing a metal-silicone rubber composite, the method comprising the steps of: (i) depositing a layer of gold on a surface of a mold; (ii) depositing a primer layer of a metal on the layer of gold, wherein the metal is selected from aluminum, chromium, titanium, and copper; (iii) applying a radiation-curable silicone composition on the primer layer; (iv) curing the silicone composition with radiation to form a silicone rubber; and (v) removing the silicone rubber from the mold, whereby the layer of gold and the primer layer axe transferred to the silicone rubber.	1. A method of metallizing a silicone rubber substrate, the method comprising the steps of: (i) depositing a primer layer of aluminum on a surface of a silicone rubber substrate, wherein the silicone rubber substrate has a coefficient of linear thermal expansion of at least 2 X 10^-4 C and (ii) depositing a layer of a ductile metal on the primer layer of aluminum, wherein the ductile metal is selected from:gold, platinum, palladium, copper, silver, aluminum, and indium. wherein the silicone rubber substrate is prepared by curing a curable silicone composition selected from a hydrosilylation-eurable silicone composition, a peroxide curable silicone composition, a condensation-curable silicone composition, an epoxy-curable silicone composition; an ultraviolet radiation-curable silicone composition, and a high-energy radiation-curable silicone composition.
Wherein the layer of gold has a thickness of from 25 to 500 nm.	Wherein the primer layer of aluminum has a thickness of from 1 to 200 nm.
Wherein the primer layer has a thickness of from 1 to 50 nm.	Wherein the ductile metal is gold or platinum.
Wherein the primer layer is aluminum.	Wherein primer layer is aluminum and between 1-200 nm Wherein ductile metal has a thickness of 20-500 nm

Table 1: A comparison between application 10/573622 and 10/573623

Grounds of Rejection maintained from Office Action dated June 1, 2009.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsukawa et al. (USP No. 6,153,326) in view of Gibbons et al. (USP No. 5,589,280) in view of Tsunekawa (USP No. 5,948,515) in view of Komiya et al (Japanese Patent Application JP 02-292013).

3. Regarding claim 1, Matsukawa discloses a method of preparing a metal-silicone rubber composite **(See examples 1 and 2 in column 3—disclosing the process used to make the metal-silicone rubber composite)**, the method comprising the steps of:

(i) depositing a layer of metal on a surface of a mold **(See column 2 lines 42- 49 and**

examples 1-2 in column 3— disclosing the depositing of a metal plate into the surface of the mold); (ii) depositing a primer layer of a metal on the layer of metal **(See column 2 lines 21-29—disclosing the use of a primer layer that is deposited between the silicone resin layer and the metal layer),** (iii) applying a curable silicone composition on the primer layer **(See column 2 lines 42-49—disclosing the injection molding/Insert Molding of a Silicone resin layer on the primer layer)**; (iv) curing the silicone composition **(See column 2 lines 42-49—disclosing the injection molding/Insert Molding of a Silicone resin layer on the primer layer.)**; and (v) removing the silicone rubber from the mold, whereby the layer of metal and the primer layer are transferred to the silicone rubber. **(See figures 1-6 showing the progression of the silicone composite through the molding process. The end product is released from the mold and has the metal layers transferred onto the cured silicone component.)**

a. With respect to claim 1, Matsukawa does not explicitly teach: (1) wherein the layer of metal that is deposited in step one is actually a layer of gold; (2) wherein the primer layer metal is selected from aluminum, chromium, titanium, and copper; (3) wherein the silicone composition is a radiation curable composition and the radiation needed to cure has a wavelength of 250 to 400 nm; and (4) wherein the injection molding system was capable of curing the radiation curable composition with radiation.

b. However, Gibbons teaches; (1) wherein the layer of metal that is deposited in step one is actually a layer of gold **(See abstract)** and (2) wherein

the primer layer metal is selected from aluminum, chromium, titanium, and copper. **(See column 5 line 61 to column 6 line 9—disclosing that the primer layer (adhesion promoting layer) is aluminum or chromium)**

c. Matsukawa and Gibbons are analogous art because they are from the same field of endeavor which is creating metal on plastic composites. At the time of the invention, it would have been obvious to the applicant being one of ordinary skill in the art, having the teachings of Matsukawa and Gibbons before him or her, to modify the teachings of Matsukawa to include the teachings of Gibbons for the benefit of improving the adhesion of the metal component to the plastic component when constructing a metal on plastic composite. The motivation for doing so is that if the oxide heat of formation between the primer layer and metal layer are contrasted the adhesion affect can be controlled while keeping the overall strength or desirable characteristics of the composite stable. Therefore it would have been obvious to combine Matsukawa and Gibbons to make the invention disclosed in the instant application because one would have been motivated to solve the problem of creating a greater adhesion affect within the composite materials.

d. With respect to claim 1, the combination of Matsukawa and Gibbons do not explicitly teach: (3) wherein the silicone composition is a radiation curable composition and the radiation needed to cure has a wavelength of 250 to 400 nm; and (4) wherein the injection molding system was capable of curing the radiation curable composition with radiation.

e. However, Tsunekawa teaches wherein silicone rubber composites can be made by applying a radiation curable composite onto a substrate in order to make a composite. **(See abstract, column 3 lines 12-21, and column 4 lines 36-67)**. Tsunekawa also teaches wherein the curing of the silicone rubber is done via a radiation source such as UV irradiation. **(See column 3 line 18, 25, 35 and 43)**. It is well known in the art that UV irradiation occurs between the wavelengths of 10-400 nm.

i. Tsunekawa discloses that the silicone composition that is used to make the silicone rubber composite can be cured (crosslinked) by heating or ultraviolet irradiation. Therefore, it would have been obvious to one having the ordinary skill in the art to modify the teachings of Matsukawa and Gibbons with the teachings of Tsunekawa because radiation is a well known curing process for crosslinking a silicone composition to make a silicone rubber.

f. With respect to claim 1, the combination of Matsukawa, Gibbons, and Tsunekawa does not teach (4) wherein an injection molding system is capable of radiation curing.

g. However, Komiya teaches that injection molding can be done using a mold which is formed by a transparent material which would allow light to irradiate the material in a cavity. **(See abstract)**.

ii. One would use a transparent mold in an injecting mold system when using a photo-polymerization type resin in order to utilize utility

savings because of the lower molding temperatures that are attained. Therefore, it would have been obvious to alter the injection molding system of Matsukawa with a transparent mold as taught by Komiya for the benefit of molding a radiation curable silicone material.

4. Regarding claim 2, Matsukawa does not explicitly disclose wherein the surface of the mold has a release coating thereon. However, it is the Examiner's position that it is well known in the art of transfer molding to utilize a release coating to promote a clean release of the composite product from the mold surface.

5. Regarding claim 3, Matsukawa does not explicitly teach wherein the layer of gold has a thickness of from 25 to 500 nm.

h. However, Gibbons discloses wherein the layer of gold has a thickness of from 25 to 500 nm. **(25 to 500 nm = 250-5000 Angstroms. See column 5 lines 32-59 disclosing that the gold layer can be 100 A to 10,000 A.)**

i. Matsukawa and Gibbons are analogous art because they are from the same field of endeavor which is creating metal on plastic composites. At the time of the invention, it would have been obvious to the applicant being one of ordinary skill in the art, having the teachings of Matsukawa and Gibbons before him or her, to modify the teachings of Matsukawa to include the teachings of Gibbons for the benefit of creating a composite with a thin layer of metal. The motivation for doing so is to allow the composite to be used in electrical packaging uses and other applications in which the size of the piece is critical. Therefore it would have been obvious to combine Matsukawa and Gibbons to

make the invention disclosed in the instant application because one would have been motivated to solve the problem of creating the smallest possible composite.

6. Regarding claims 4 and 5, Matsukawa does not teach wherein the primer layer is aluminum and is between 1-50 nm.

j. However, Gibbons teaches wherein the primer layer is aluminum and is between .3-20 nm (3-200 Angstroms). **(See claim 16)**.

k. The use of a primer layer is to promote adhesion between the metal layer and the silicone layer and it would be the objective of one having the ordinary skill in the art to keep the primer layer as thin as possible in order to limit the thickness of the composite. Therefore, it would have been obvious for one having the ordinary skill in the art to use a thin layer of primer.

7. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsukawa et al. (USP No. 6,153,326) in view of Gibbons et al. (USP No. 5,589,280) in view of Tsunekawa (USP No. 5,948,515) in view of Komiya et al (Japanese Patent Application JP 02-292013) and in further view Takamizawa et al. (USP No. 4,303,484) .

8. Regarding claim 6-8, the combination of Matsukawa, Gibbons, Tsunekawa, and Komiya does not explicitly disclose the composition of the radiation curable silicone composition.

l. However, Takamizawa teaches a photocurable organopolysiloxane composition to be incorporated with a material to make it radiation curable comprising a photo-sensitizer, an organopolysiloxane with at least two alkenyl

groups per molecule, an organopolysiloxane with at least two mercaptoalkyls per molecule, and an organopolysiloxane with a phenyl group bonded to the silicon atom. **(See abstract)**.

m. It is examiner's position that the claimed composition is conventional in silicone rubber compounds and would have been readily obvious to one having the ordinary skill in the art to use to make a silicone rubber composite. It would have been obvious to one having the ordinary skill in the art to use an organopolysiloxane with a photo-initiator to make a radiation curable composition, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin, 125 USPQ 416.*

n. Also insofar as the composition of the silicone rubber affects physical properties, such as the viscosity of the silicone rubber, it would have been obvious to one having the ordinary skill in the art to select a desired, appropriate composition. The use of organopolysiloxane for example, is known to affect the overall viscosity of the silicone rubber composite made. **(See column 4 lines 12-20 of Takamizawa)**.

9. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsukawa et al. (USP No. 6,153,326) in view of Gibbons et al. (USP No. 5,589,280) in view of Tsunekawa (USP No. 5,948,515) in view of Komiya et al (Japanese Patent

Application JP 02-292013) and in further view Takamizawa et al. (USP No. 4,303,484) and still in further view of Jacobine et al. (USP No. 5,516,455).

10. Regarding claim 9, the combination of Matsukawa, Gibbons, Tsunekawa, Komiya, and Takamizawa does not explicitly disclose the composition of the radiation curable silicone composition containing liquid crystals.

o. However, Jacobine teaches the use of liquid crystals in radiation curable mixtures. **(See abstract)**. While Jacobine does not disclose the exact combination/composition of a liquid crystal to be used to make a radiation curable silicone composition, Jacobine does describe the use of Liquid crystals with silicone formulations with photoinitiator and organosiloxane compounds. **(See column 5 lines 61-65)**. In so far as the composition of the silicone rubber affects physical properties, such as the transparent nature of the silicone rubber, it would have been obvious to one having the ordinary skill in the art to select a desired, appropriate composition including the use of liquid crystals in formulating the desired compound. The addition of liquid crystals would allow for a polymer-dispersed liquid crystal composite to be able to switch between an opaque state to a transparent state using the refractive nature of the liquid crystals.

Response to Arguments

1. Applicant's arguments filed September 09, 2009 have been fully considered but they are not persuasive.

2. **Applicant Argument:**

a. Applicant argues that the combination of *Matsukawa et al. (USP No. 6,153,326), Gibbons et al. (USP No. 5,589,280), Tsunekawa (USP No. 5,948,515), and Komiya et al (Japanese Patent Application JP 02-292013) does not teach wherein the silicone composition can be cured with radiation having a wavelength from 250 to 400 nm.*

3. **Examiner Response:**

b. However, Tsunekawa teaches wherein silicone rubber composites can be made by applying a radiation curable composite onto a substrate in order to make a composite. **(See abstract, column 3 lines 12-21, and column 4 lines 36-67)**. Tsunekawa also teaches wherein the curing of the silicone rubber is done via a radiation source such as UV irradiation. **(See column 3 line 18, 25, 35 and 43)**. It is well known in the art that UV irradiation occurs between the wavelengths of 10-400 nm.

i. Tsunekawa discloses that the silicone composition that is used to make the silicone rubber composite can be cured (crosslinked) by heating or ultraviolet irradiation.

4. **Applicant Argument:**

c. That the use of the Komiya reference makes the combination inoperable because Komiya is limited to only the visible light spectrum.

5. **Examiner Response:**

d. However, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. *In re*

Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

e. In this case, Komiya has been supplied as an example of how the injection molding procedure of Matsukawa can be altered from a heat curing system to a photo-polymerization system. Furthermore, Komiya is drawn to injection molding of photo-polymerization type resin. Photo-Polymerization is not limited to only visible light and one having the ordinary skill in the art would realize that UV irradiation is suitable light source for photo-polymerization. Komiya when combined with the teachings of Tsunekawa would have lead one having the ordinary skill in the art to use a UV irradiation source to conduct a photo-polymerization process.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMJAD ABRAHAM whose telephone number is (571)270-7058. The examiner can normally be reached on Monday through Friday 8:00 AM to 5:00 PM Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Phillip Tucker can be reached on (571) 272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AAA

/Philip C Tucker/
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